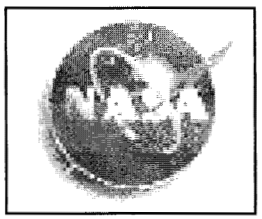
Developing a Strategic Approach to Knowledge Management



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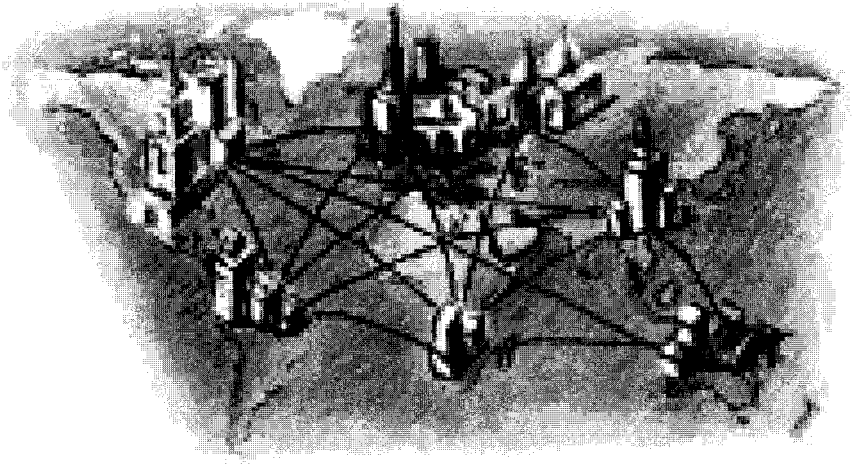
JPL

Approach

- Defining Knowledge Management
- A Knowledge Management Architecture
  - Services
  - Processes
  - Systems
- Creating a Federated Architecture for NASA
- Building Partnerships

What is Knowledge Management?

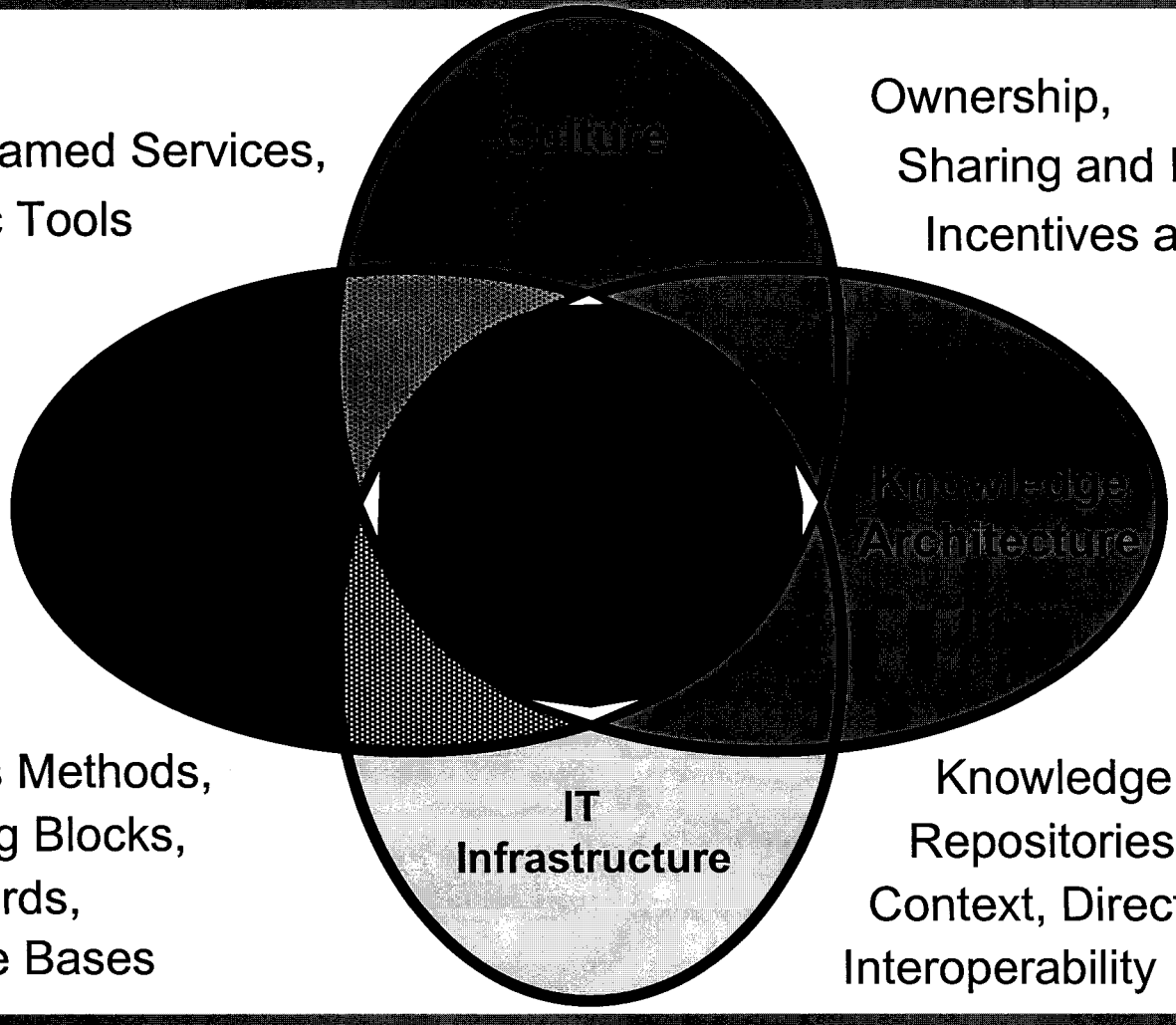
- Knowledge management is getting the right information to the right people at the right time, and *helping* people create knowledge and share and act upon information in ways that will measurably improve the performance of NASA and its partners



KM Success Factors Learned from Benchmarking

Training,
Mainstreamed Services,
Strategic Tools

Ownership,
Sharing and Reuse,
Incentives and Rewards

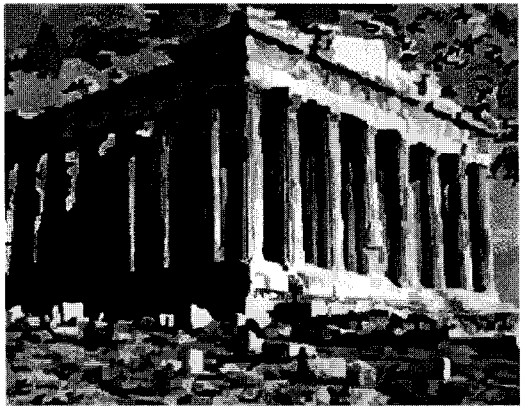


Access Methods,
Building Blocks,
Standards,
Service Bases

Knowledge Resources,
Repositories, Content,
Context, Directories,
Interoperability

A Knowledge Architecture

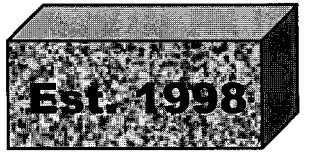
- A knowledge architecture addresses
  - Services
  - Processes
  - Systems



- JPL's implementation focuses on delivering products and operational services that projects see as useful
- Requirements are derived from customers, service providers, and the NASA and JPL strategic plans

KM Architectural Cornerstones

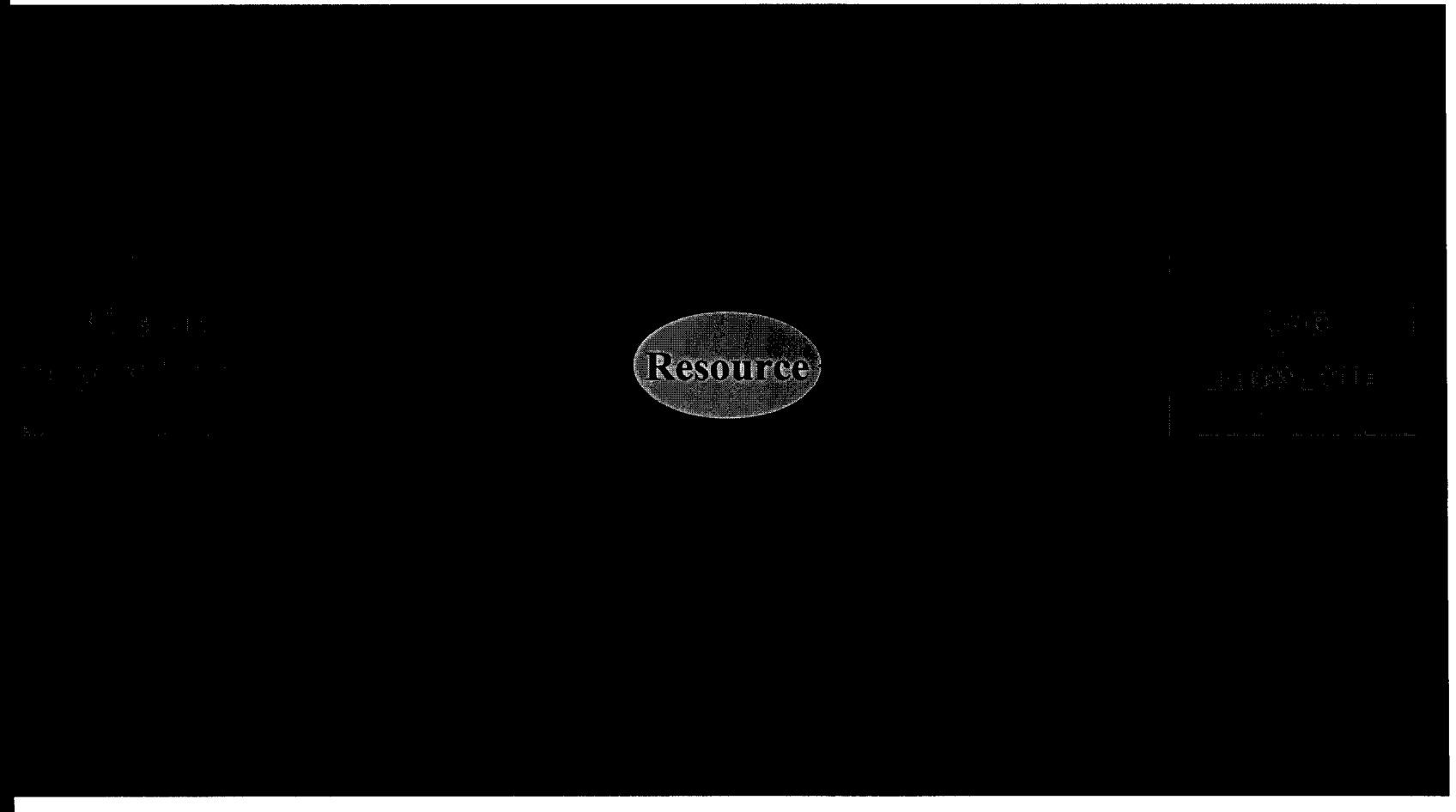
- Realize success requires cultural acceptance
- Provide access to knowledge
- Ensure knowledge is secure and validated
- Standardize only what's necessary
- Build complete service base and capabilities
  - Interoperability
  - Migration tools
  - Application support and refreshment
  - Training



KM Services

- KM services include
  - Document Management ("lust to dust")
  - Web Site Management (tools, content, templates)
  - Navigation (search, browse, index)
  - Expert Connections (profiles and access)
  - Collaborative Environments
  - Standards Working Group
  - Knowledge Creation Studies (creating, capturing, sharing)

The KM Process (a.k.a. "Doing Work")

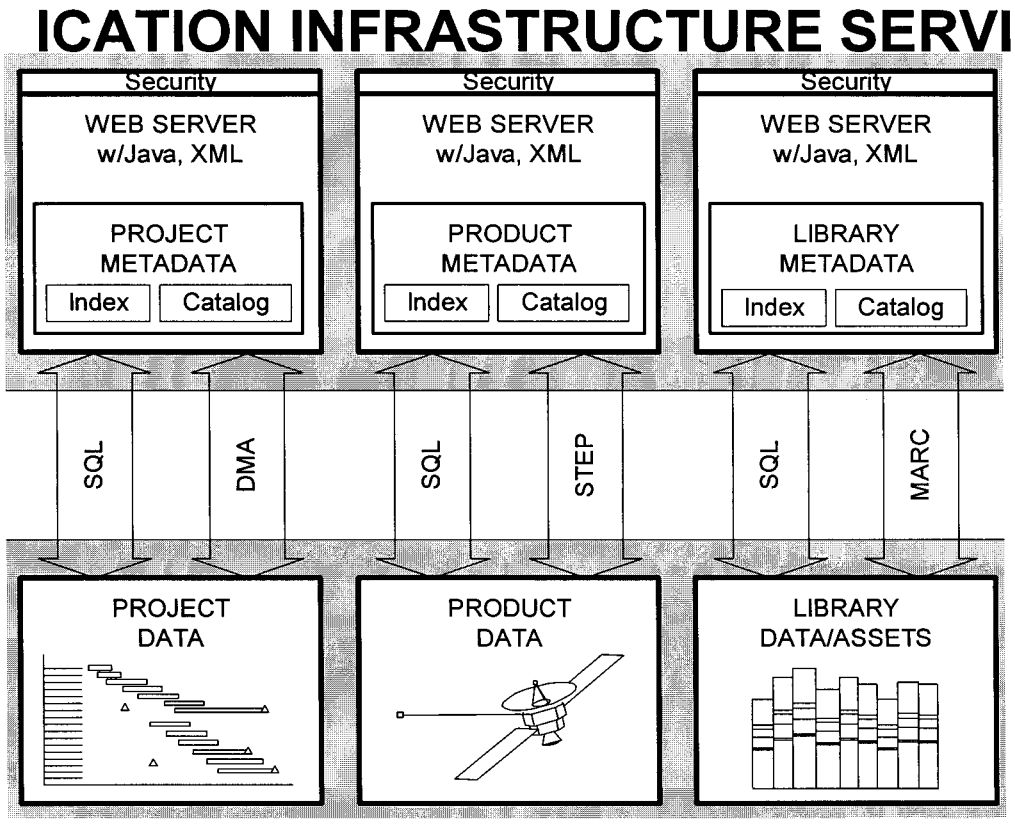


KM System Architecture

- A layered approach building upon already existing infrastructure and services, KM provides
  - User interface
    - Enterprise portal
    - Data channels for roles, interests, and disciplines
  - KM functions
    - Taxonomies for browsing
    - Robust search capability
    - Virtual team environments (sharing and collaborating)
  - Application infrastructure services
    - Document management (templates and tools)
    - Content management (accuracy, timeliness, purpose)
    - Standards (metadata, name spaces, engineering)

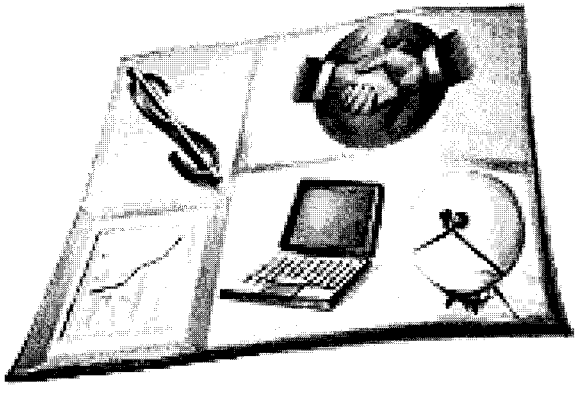
KM System Architecture (continued)

- Knowledge resources
  - Existing resources
  - Experts database
- Infrastructure services
  - Network
  - Messaging
  - File
  - Desktop support
  - Data access
  - Security



KM Partnerships

- Everyone is already doing KM, our job is to find *good* services and solutions and build a federation of excellent resources for our employees and partners
- KM is an enabler to other processes within NASA such as
  - Generate Knowledge
  - Communicate Knowledge
  - Provide Aerospace Products and Capabilities

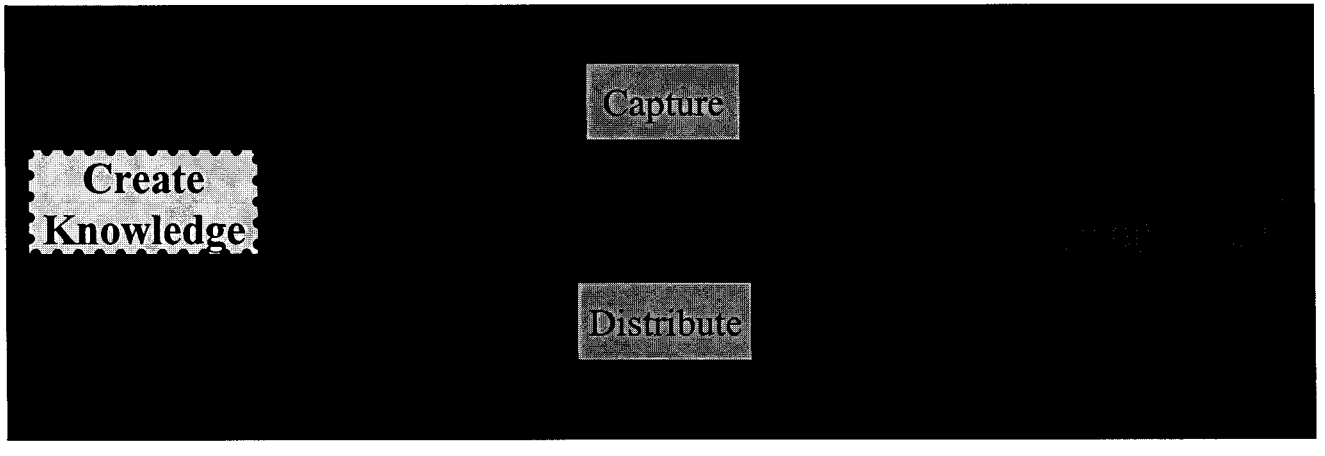


Recognizing the Importance of Culture

- The most critical factor in the success of a KM implementation is cultural acceptance
  - Recognizing issues of data ownership: individual vs. organization
  - Acknowledging the appropriateness and acceptance of knowledge sharing and reuse
  - Rewarding individuals and teams for promoting KM
    - Capturing team discussions and decisions
    - Mentoring
    - Documenting lessons learned
    - Making tacit knowledge explicit

Creating an Architecture for NASA

- NASA's KM activities are led by the CIO, and guided by the NASA KM Team (comprising anthropologists to architects to authors)
  - Knowledge Navigation
  - Lessons Learned Information System
  - Experts Directory Service



Navigating Across NASA

- Knowledge Navigation
  - Allow customized views into NASA resources
  - Facilitate and broadcast communities of practice
  - Utilize the powers of push *and* pull technologies
  - Consolidate current, multiple publishing venues
  - Improve the ability to share knowledge across NASA Centers and workgroups
  - Stimulate development of interoperable standards, architectures, and knowledge transfer processes between Centers to take NASA into the next generation of web usage


inside NASA
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Capturing Lessons Learned

- Lessons Learned Information System
  - Create and maintain a knowledge resource to facilitate archival, access, and incorporation of NASA safety and engineering experiences
  - Increase the "design for safety" by building into our processes the lessons learned by others
  - Mitigate risk through better integration of Agency knowledge
  - Improve ease of data capture
  - Improve quality and extend types of data
    - Voice, video, and photographs

Locating Experts at NASA

- Experts Directory Service
  - Quickly find science and engineering experts across the Agency
  - Provide service for NASA personnel trying to locate others working in a related field or on a particular project
  - Help new NASA personnel locate others with common interests
  - Facilitate collaboration among distributed groups

Summarizing the Architectural Steps

- Get executive sponsorship
- Find others doing or supporting "knowledge management" (providers or infrastructure)
  - Build a diverse team
  - Analyze your current resources and infrastructure
- Gather requirements
  - Understand your customers, constraints, potential service providers, and ***the culture***
- Design a long-term, sustainable solution
  - Provide rigorous system engineering

Summarizing the Steps (continued)

- Find *more* partners and pilots
- Develop solutions, services, and rewards
  - Deliver specific solutions to specific customers
  - Make the services fully operational (including funding and metrics)
  - Reward knowledge sharers
  - Recognize contributions of the KM team and others
- Continue to learn from others and share what you have learned!